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Soluble kit receptor in human serum.

Wypych J, Bennett LG, Schwartz MG, Clogston CL, Lu HS, Broudy VC, Bartley TD, Parker VP, Langley KE
Blood 1995 Jan 85:66-73

BROWSE : [Blood](#) • [Volume 85](#) • [Issue 1](#)

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Abstract

c-kit encodes the transmembrane receptor tyrosine kinase (Kit) for the recently described ligand stem cell factor (SCF). We have developed an enzyme-linked immunosorbent assay for measuring soluble human Kit and we have used the assay to show high levels of soluble Kit in human serum. The distribution of soluble Kit levels was investigated among 112 normal human serum donors. The mean serum level (\pm SD) was found to be 324 \pm 105 ng/mL with the values falling between 163 ng/mL and 788 ng/mL. No correlation between soluble Kit levels and the sexes or ages of the donors was found. Partial purification using immunoaffinity chromatography allowed us to characterize the soluble Kit from pooled human serum. Antibodies generated to a 497-amino acid recombinant human soluble Kit corresponding to the N-terminal extracellular domain of the receptor recognized the serum-derived soluble Kit by immunoblotting. We found that the serum-derived soluble Kit is glycosylated, with mostly N-linked but also O-linked carbohydrate, and with terminal sialic acid residues. When compared with the recombinant human soluble Kit, the serum-derived material was similar both in size and glycosylation pattern. CNBr cleavage of the isolated serum-derived material followed by amino terminal sequencing confirmed the presence of five peptides expected for the extracellular portion of the Kit molecule. The immunoaffinity purified serum-derived soluble Kit inhibited binding of [¹²⁵I]SCF to membrane-bound receptor in an in vitro assay. These results indicate that soluble Kit could modulate the activity and functions of SCF in vivo.

MeSH

[Adult](#); [Amino Acid Sequence](#); [Animal](#); [CHO Cells](#); [Chromatography](#); [Affinity](#); [Enzyme-Linked Immunosorbent Assay](#); [Escherichia coli](#); [Female](#); [Glycosylation](#); [Hamsters](#); [Human](#); [Immunoblotting](#); [Male](#); [Middle Age](#); [Molecular Sequence Data](#); [Proto-Oncogene Protein c-kit](#); [Proto-Oncogene Proteins](#); [Receptor Protein-Tyrosine Kinases](#); [Receptors](#); [Colony-Stimulating Factor](#); [Recombinant Proteins](#); [Reference Values](#); [Sensitivity and Specificity](#); [Solubility](#)

-continued

(iv) ANTI-SENSE: no

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:

ATG GGT CTC ACC TCC GAA CTG CTT CCC CCT CTG TTC TTC CTG CTA	45
Met Gly Leu Thr Ser Gln Leu Leu Pro Pro Leu Phe Phe Leu Leu	
1 5 10 15	
GCA TGT GCC GGC AAC TTT GTC CAC GGA CAC AAG TGC GAT ATC ACC	90
Ala Cys Ala Gly Asn Phe Val His Gly His Lys Cys Asp Ile Thr	
20 25 30	
TTA CAG GAG ATC ATC AAA ACT TTG AAC AGC CTC ACA GAG CAG AAG	135
Leu Gln Glu Ile Ile Lys Thr Leu Asn Ser Leu Thr Glu Gln Lys	
35 40 45	
ACT CTG TGC ACC GAG TTG ACC GTA ACA GAC ATC TTT GCT GCC TCC	180
Thr Leu Cys Thr Glu Leu Thr Val Thr Asp Ile Phe Ala Ala Ser	
50 55 60	
AAG AAC ACA ACT GAG AAG GAA ACC TTC TGC AGG GCT GCG ACT GTG	225
Lys Asn Thr Thr Glu Lys Glu Thr Phe Cys Arg Ala Ala Thr Val	
65 70 75	
CTC CGG CAG TTC TAC AGC CAC CAT GAG AAG GAC ACT CGC TGC CTG	270
Leu Arg Gln Phe Tyr Ser His His Glu Lys Asp Thr Arg Cys Leu	
80 85 90	
GGT GCG ACT GCA CAG CAG TTC CAC AGG CAC AAG CAG CTG ATC CGA	315
Gly Ala Thr Ala Gln Gln Phe His Arg His Lys Gln Leu Ile Arg	
95 100 105	
TTC CTG AAA CGG CTC GAC AGG AAC CTC TGG GGC CTG GCG GGC TTG	360
Phe Leu Lys Arg Leu Asp Arg Asn Leu Trp Gly Leu Ala Gly Leu	
110 115 120	
AAT TCC TGT CCT GTG AAG GAA GCC AAC CAG AGT ACG TTG GAA AAC	405
Asn Ser Cys Pro Val Lys Glu Ala Asn Gln Ser Thr Leu Glu Asn	
125 130 135	
TTC TTG GAA AGG CTA AAG ACG ATC ATG GAC GAG AAA TAT TCA AAG	450
Phe Leu Glu Arg Leu Lys Thr Ile Met Asp Glu Lys Tyr Ser Lys	
140 145 150	
TGT TCG AGC TAG	462
Cys Ser Ser End	
153	

(2) INFORMATION FOR SEQ ID NO: 5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 462
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

(A) DESCRIPTION: hIL-4/R121E

(iii) HYPOTHETICAL: no

(iv) ANTI-SENSE: no

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 5:

ATG GGT CTC ACC TCC CAA CTG CTT CCC CCT CTG TTC TTC CTG CTA	45
Met Gly Leu Thr Ser Gln Leu Leu Pro Pro Leu Phe Phe Leu Leu	
1 5 10 15	
GCA TGT GCC GGC AAC TTT GTC CAC GGA CAC AAG TGC GAT ATC ACC	90
Ala Cys Ala Gly Asn Phe Val His Gly His Lys Cys Asp Ile Thr	
20 25 30	
TTA CAG GAG ATC ATC AAA ACT TTG AAC AGC CTC ACA GAG CAG AAG	135
Leu Gln Glu Ile Ile Lys Thr Leu Asn Ser Leu Thr Glu Gln Lys	
35 40 45	
ACT CTG TGC ACC GAG TTG ACC GTA ACA GAC ATC TTT GCT GCC TCC	180